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ABSTRACT

The literature review considers characteristics of autism in three general areas of impairment: communication; cognition; and social behavior. Briefly noted are incidence and etiology facts. A variety of definitions are presented including a psychiatric definition, Leo Kanner's definition, and the definition of the Autism Study Committee of Iowa. Diagnostic criteria are presented including the Autism Diagnostic Observation Schedule and an ecobehavioral coding system. Studies which have specifically examined impairments in communication, cognition, and social development are then summarized. Nine implications are drawn including: isolated abilities can result in overestimating the autistic child's potential; intervention must begin early; intervention should be carried out in all phases of the child's life; autism characteristics will vary along a continuum; curriculum must address communication skills; and programming for intervention should be based on assessment of the individual rather than on diagnosis. Contains 16 references. (DB)

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Literature Review
Characteristics of Autism

Marilyn Miller
Introduction to Mental Disabilities
244

Fall Semester, 1990

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Introduction

In this paper, I will discuss the characteristics of autism. Autism often occurs in conjunction with mental retardation (about 80% of cases) (Morgan, 1986)., but I have chosen to focus more narrowly on autism with normal IQ is so far as cognitive levels can be assessed. IQ may be unknown because the child is "inaccessible, inattentive, and resistant" (Morgan, 1986, p.5). to testing. Where I is assessed, it has been done on nonverbal instruments only.

There is a question in Iowa at the present time about whether autism should be defined under a separate disability category rather than included under the general heading of Behavior Disorders. (Autism Society of Iowa, 1989). Behavior disordered generally reflects intentional misbehavior and/or hyperactivity. Since the incidence of autism is relatively small, it was lumped with behavior disorders, unfortunately.

A single definitive listing of characteristics has not been agreed upon by researchers. This is probably the cause of a lack of continuity of services for autistic students in the past. It is also due to the many varied characteristics associated with the disorder. The definitions put forth in this paper make a lot of sense, but are not all in agreement. Therefore I will devote much of this paper to several listings of characteristics by a number of researchers.

Finally, I will discuss in more depth three general areas of impairment: communication, cognitive, and social.



In an undated leaflet, The National Society for Children and Adults with Autism has published this chart portraying the more important signs and symptoms of autism. A child exhibiting seven or more of these symptoms constantly needs further evaluation.

Incidence and Etiology

The incidence of autism is 5-15 in 10,000 population. The ratio of 4 boys to 1 girl being diagnosed is true. All racial, social, and ethnic backgrounds are affected. The condition is chronic.

Autism is a biogenic disorder which has nothing to do with the nurturing qualities of parents. Earlier this was felt to be true by many. It is reasonable to suspect a genetic component in its etiology. The most plausible conclusion we can draw is that autism is caused by an underlying organic defect (or combination of defects). It affects cognitive functioning, emotional and affective perception, and responsiveness. Autism may be aggravated or improved by environment, but is not caused by it. (Morgan, 1986).

Attempts to Define Autism

A psychiatric definition of autism is

- 1) a qualitative impairment in social interaction involving at least 2 of the following:
 - a) lack of awareness of feelings.
 - b) lack of comfort seeking.
 - c) lack of initiation.
 - d) lack of social play.
 - e) lack of friend making ability.
- 2) a qualitative impairment in communication involving at least 1 of the following:
 - a) does not communicate in developmental sequences.
 - b) lack of nonverbal communication.
 - c) lack of speech content.
 - d) does not initiate or sustain conversation.
 - e) speech production abnormalities.
- 3) restricted repertoire of activities, interests, and imaginative development involving at least 1 of the following:

- a) stereotyped body movements.
- b) persistent preoccupation with objects.
- c) marked distress over trivial environmental changes.
- d) unreasonable insistence on routines.
- e) absence of imaginative activity.
- f) restricted patterns of interest. (Autism Society of Iowa, 1989, p. 7-8).

Sam B. Morgan, Dept. of Psychology, Memphis State University, reports that Leo Kanner, Director of Child Psychiatry Clinic at Johns Hopkins, first saw a 5 year old boy who demonstrated a novel cluster of behavioral symptoms in 1938. By 1943, he had seen 10 more children presenting these symptoms. He published an article setting forth symptoms of a rare behavior disorder which he called early infantile autism. Kanner outlined 5 major symptoms: inability to relate to people and situations from the start of life, obsessive need to maintain sameness in the environment, failure to use language for communication, fascination with objects and unusual dexterity in handling them, and attractive appearance, serious facial expression, and isolated skills which are extraordinary. (Morgan, 1986).

The Autism Study Committee has put forth this definition: "Autism is a lifelong developmental disability which typically first appears in early childhood." (Autism Society of Iowa, 1989, p. 5) It is educationally defined to include disturbances having varying degrees of severity. The following areas of involvement significantly interfere with the learning process: 1) developmental rates and sequences of skill acquisition, 2) cognition, 3) communication, 4) sensory processing, 5) social participation, and 6) the repertoire of activities, interests, and imaginative development. (Autism Society of Iowa, 1989).

Another widely used set of diagnostic criteria for autism are: 1) onset before 30 months, 2) pervasive lack of responsiveness to other people, 3) gross deficits in language development, 4) peculiar speech patterns, 5) bizarre responses to environment such as resistance to change and peculiar attachment to inanimate objects, 6) absence of delusions, hallucinations, or incoherence as seen in schizophrenia. (Morgan, 1986). Courchesne's definition is very similar.

Catherine Lord, using the ADOS, The Autism Diagnostic Observation Schedule, lists these criteria for use in diagnosis: 1) qualitative impairments in eye gaze, facial expression, and gestures, 2) an impaired or deviant response to emotions of others, 3) lack of modulation of behavior according to social context, 4) weak integration of social and communicative behavior, 5) relative failure to initiate or sustain conversation, 6) stereotypic and repetitive use of language, 7) abnormalities in pitch, stress, rate, rhythm and intonation, 8) lack of make believe play, 9) preoccupation with restricted patterns of interest, 10) compulsive adherence to routines, 11) repetitive motor movements involving hand or finger flapping or twisting. (Lord, Rutter, Goode, Heemsbergen, Jordan, Mawhood, & Schopler, 1989).

Rotholz and Kamps used an ecobehavioral coding system (CISSAR-SPED) to discover characteristics of students with autism. This is a direct observational instrument which provides for noting both appropriate and inappropriate behaviors. They found that students' academic responding varied from 34% to 72% on writing and reading aloud task participation. Task management varied from 19% to 61%. Higher levels of academic engagement correlated with higher achievement gains on standardized tests. High rates of task management would indicate too much time in behaviors preparatory to learning and not enough in active academic

responding. The incidence of competing behavior (self-stimulation) ranged from 10% to 41%. This information is important in working toward the goal of improving time on task. (Rotholz, & Kamps, 1989).

Cantwell and others did a study of a group of higher functioning boys, some diagnosed with autism and some with developmental receptive dysphasia. The comparison of these two groups was interesting. Boys in both groups were rated similarly at the beginning of the study. They were rated in four major areas of functioning: 1) language development, 2) peer relations and social responsiveness, 3) stereotypic or repetitive behaviors, and 4) disruptive public behavior. After two years these boys were tested again. The functioning of autistic children in middle childhood was substantially worse than that of children with severe developmental disorders of receptive language. Apparently no particular intervention was carried on during the two years. The autistic group made less progress mainly because they failed to use language adequately for social communication. Autistics did not change in overall impairment of stereotypic and repetitive behavior. There was only slight improvement in peer relationships. The only real gain was in disruptive public behavior. (Cantwell, Baker, Rutter, & Mawhood, 1989). The dysphasic group showed more change. Nearly half of those with poor language were communicating well at follow-up, two years later. Dysphasia is a developmental disorder, in some ways appearing to mirror autism, but with a generally more favorable outlook for future normalcy. (Cantwell, et al., 1989).

Communication Impairments

Language deficiency is a central feature of the disorder. At least 28% diagnosed autistic are mute. Speech delay represents the most frequent early complaint by parents of autistic children. Onset of meaningful speech before age 5 or 6 is crucial to later adjustment. (Morgan, 1986). There are varying degrees of impairment ranging from slight language delays to marked delays in expression but not comprehension to marked delays in both expression and comprehension at the severe end of the spectrum. (Goodman, 1989).

Oshima-Takane investigated pronominal errors in autistic children. She reported two normal children with consistent pronominal errors and a more advanced level of language development. This suggests that a low level of language development is not responsible for pronominal errors. She reports that autistic children have a severe attention deficit and often do not attend to the speech of others. Thus, autistic children persistently make pronominal errors because they fail to observe pronouns used in speech directed to another person. MLU's were calculated for each child and conversation was held with one child and two adults. Autistic children's attentiveness to the model and imitative behaviors were examined. The children did learn to imitate the pronoun correctly when they observed the model talking to another person, but not when conversation was directed only to themselves. (Oshima-Takane, & Benaroya, 1989).

In a study done by Wetherby, three autistic subjects were studied. All three were functioning at a prelinguistic stage. All three were deficient

in joint attention acts (acts used to direct another's attention to an object, including comment on object/action, or request information). Much of the time the child communicated spontaneously without regard to adult action or talk, used many gestures, and failed to use consonant sounds. These are all evidence of poor prelinguistic language development. In contrast, Down Dyndrome children studied showed a high proportion of consonant sounds. (Wetherby, Yonclas, & Bryan, 1989). Request/protest functions are first to emerge in communication. If the child develops more social use of language, social interaction functions emerge next and joint attention acts emerge later. Absence of joint attention acts may be more detrimental to further communication development than absence of consonants. (Wetherby, et al., p. 156).

The failure to develop an adequate linguistic system appears to have its most serious repercussions during early adolescence in nonlinguistic areas of development such as IQ and social behavior. (Goodman, 1989).

Cognitive Impairment

A study by Roberts examines the relationship between the frequency of echolalia and receptive language ability. She found that children with poor receptive language skills produced significantly more echolalia. Echolalia occurring after 2½-3 years of age is associated with some form of language retardation. Seventy-five per cent of autistic children go through periods of marked echolalia. It appears to be a developmental stage. Prognosis is poor for children who have not ceased echolalia by age six. Mitigated echolalia is repetition of what is heard

adding affirmation or negation. Children with mitigated echolalia were found to have higher IQ scores than those uttering pure echolalia. (Roberts, 1989).

In a study by Perner and others, the mental states of autistic children were studied. Communication boxes were used. "Let's see what's in the box? I can't open it." and similar games with the boxes were used. One topic studied was false belief. The vast majority of autistic children with mental ages in excess of three years were incapable of understanding false belief. (They were shown a candy box and shown that a pencil was inside, then asked to predict what a friend would say was in the box.) They could remember their own erroneous response to the question, so it was not memory failure. It was not general impairment in language comprehension because of a control where children with specific language impairment performed near perfectly on the same task. These results underline how poorly autistic children's performance is in understanding false belief. What normal children can do with ease at a mental age of four, only a small minority of autistic children can do at a mental age of almost thirteen years. (Perner, Frith, Leslie, & Leekam, 1989).

Self-stimulation (body rocking, hand flapping) has been identified as a primary characteristic of autism. In a study of six autistic children, the echolalic children were able to learn a new discrimination without any external suppression of self-stimulatory behavior by the experimenter. Mute children required that self-stimulation be suppressed before they could learn. For mute children, self-stimulation is a sensory reinforcer. Discrimination was learned when the self-stimulation was reduced to 4%. All three echolalic children acquired the discrimination during the first presentation, and two of the three suppressed

their self-stimulating behavior on their own. The third learned in spite of highly disruptive self-stimulation (rocking, finger flicking, and undifferentiated verbalizations). (Chock, & Glahn, 1983).

Rotholz and Kamps also discuss self-stimulation activities which interfere with academic responding. They agree that this behavior does interfere with learning and performance. They suggest that further study is needed to discover if some self-stimulation interferes to a greater degree than other kinds. Further, they ask how much emphasis should be placed on reduction of competing behaviors. They believe that ecobehavioral assessment may be the answer. (Rotholz & Kamps, 1989). I feel that this will have to be an individual matter for each child, and that averages of various autistic children will not be relevant.

Diminished motivation is also characteristic of autistic learners. Not only are such students frequently withdrawn and preoccupied, they also tend to be unmotivated to explore new environments, to expand their spheres of interest, and to test alternatives responses. This causes a problem in school because there are so few reinforcers for these children. Autistic children perform so few correct responses that can be reinforced, that they may have difficulty associating correct responses with reinforcers. The reduced reinforcement received may further suppress their already limited motivation. (Simpson & Regan, 1986).

Courchesne did some research in nonretarded autistic subjects using electrodes placed on the head to record attention to auditory and visual target detection. Those in the experiment were 19.7 years $\pm$ 3.2 years, with IQ scores of 70 or greater. These individuals appeared to produce

neurophysiological activity directly opposite of normal individuals. He found that attentional dysfunction was not necessarily a direct consequence of or dependent upon sensory physiological activity. (Courchesne, et al., 1989)

Social Impairment

Another area of study is social/play impairment. In autistic children, social interaction is often so bizarre that it causes alienation rather than friendship. Autistic children have particular difficulty in deciphering social and emotional cues. There is a marked absence of cooperative play or innovative pretend play. Abnormalities in affective contact may be the most debilitating impairment in autism. Taken together, lack of language skill and social impairment result in aloofness and overarousal and a bewildering world for the individual. (Goodman, 1989).

Komoto and others cite two cases of depressive episodes in autistic adolescents. In both cases, the mood disturbances seem to have been brought on by the appearance of secondary sexual characteristics. Komoto states that this finding conforms to work done by Rutter in 1978. He found that autistics began to have periodic mood disturbances clearly distinguishable from normal during puberty. Family history for affective disorders was negative. Whether these cases occur in a subgroup of autism or are a coincidence is not clear. Further study or case study reports are needed. (Komoto, Usui, & Hirata, 1984).

Implications

1. Parents, teachers, and researchers must not

be misled into overestimating potential. The isolated abilities shown by autistic children often mislead us to overestimate cognitive potential and underestimate cognitive impairment. Even though autistic behaviors may diminish as the child grows older, the isolated skills rarely merge into any adaptive intelligence that enables the child to understand and cope flexibly with the world. (Morgan, 1986). In the study by Perner and others, she found that autistic children were grossly delayed in developing theory of mind. About 1/3 of autistic children understood "knowing" in terms of visual access, that is, understanding that one knows something because one has seen it, and conversely, that one does not know something if he has not seen it. This performance is similar to a normal three year old. About 1/4 of the autistic children studied were unable to make consistent judgments of visual access, a two year old skill. Visual access has to do with the question, "Did I let someone look?" About 2/3 of the sample had difficulty with the question "Who knows?" compared to normal 3-4 year old children. (Perner, et al., 1989).

An autistic child may demonstrate unusual "cognitive" skill. For many years, the assumption prevailed that these scattered skills gave glimpses of the child's "true" intelligence, which was masked by withdrawal and lack of communication. This led to the further assumption that the child's normal intelligence would emerge if these barriers could only be removed. Now, further research has shown that these hoped for potentialities are seldom realized. The isolated skills rarely prove useful in real situations. Most autistic individuals, then, maintain lifelong cognitive impairment. The specific defect underlying this impairment remains the subject of speculation,

but intensive scientific effort and research continues in an attempt to better understand autism. (Morgan, 1986).

2. Intervention must begin early. Preschool language problems have a substantial detrimental effect on later academic and social performance. Therefore, early intervention is absolutely necessary. There is a dilemma in that a child may not be referred for a language delay until 18-24 months or even entry into kindergarten. (Wetherby, et al., 1989). Wetherby goes on to discuss diagnostic methods which may be used prior to 18-24 months of age in order to try to start intervention as early as possible.

3. Optimally, intervention should be carried on in all phases of the child's life. Autistic children who respond best to behavioral treatment generally have parents who are willing to assume the role of primary therapists. Such treatment is much more effective when initiated early and when parents are committed to placing demands on the child and carefully managing behavioral contingencies. (Morgan, 1986, p.5).

4. Autism will vary from some characteristics to extremely handicapped on a continuum of behavior. Children are placed somewhere on the continuum depending on the severity of their symptoms. But all autistic children have communication problems to a greater or lesser degree. Deficits in communication impact on all areas of cognitive growth and nearly all areas of daily living. The maladaptive behavior presented by autistic children may be a direct result of difficulty with the language system. These behaviors include temper tantrums, inattention, aggression, repetitive motor movements, and being

"out of control" when there are small changes in the environment. (Quinn & Beisler, 1986.)

5. Curriculum must address communication skills. Communication skill is so basic to all of life. In 1966, when training of autistics first began, programming stressed acquisition of verbal imitation skills. However, Rotholz and Berkowitz found that imitative speech did not necessarily lead to functional communication. (Rotholz & Berkowitz, 1989). Echolalia in autism is thought to be the result of difficulty in communication due to lack of understanding and is an attempt to overcome this difficulty. Persistent atypical echolalia occurs invariably with severely reduced receptive language, poor test performance on standard IQ tests, and marked discrepancy between verbal and nonverbal intelligence. (Roberts, 1989, p. 272). Seventy-five per cent of autistic children go through periods of marked echolalia. It appears to be a developmental stage. Prognosis is poor for children who have not ceased echolalia by age six. (Roberts, 1989). Speech in autistic children consists of rote-learned chunks which the child associates and uses in particular contexts. It is likely that the autistic child relies heavily on associative memory and most of his speech is delayed echolalia. The only way to assess an autistic child's expressive ability is to examine the way he functions in his environment and to look again at echolalia and how the child may be using it to get through to his listeners. Some autistic children never make the transition through the echolalic stage. Their development is arrested at low levels of language functioning, and poor comprehension. (Roberts, 1989).

Any communicative intervention mode may be

successful if (a) the student is motivated to learn, (b) the vocabulary taught is functional, and (c) the communication can change the student's environment. (Rotholz & Berkowitz, 1989).

6. Autistic children should focus on conversation directed to others as well as those directed to them. This conclusion was drawn after reading the research by Oshima-Takane and Benaroya. They found that autistic children could learn to imitate pronouns correctly if they observed the models directed to another person as well as those directed to themselves. In contrast, when autistic children observed the model directed only to themselves, they were most likely to show consistent incorrect imitation. It can be said then, that autistic children can process information provided from pronoun models if they attend to the model and that their behavior reflects what they are processing. Immediate echolalia then, reflects a degree of comprehension rather than a lack of comprehension. (Oshima - Takane, et al., 1989).

7. Programming for intervention should be based on assessment of the individual rather than on diagnosis. Functional levels of autism vary widely. If we could only say to the child "Why don't you try being a little less autistic?" Improvement is possible by using a very structured environment and behavior management techniques in a cooperative effort in every phase of the child's life. Programming must be based on assessment of the child's individual needs rather than focusing on the diagnosis of autism.

8. Autism may be improved by environment. Early treatment programs require early diagnosis of autism, early counseling of parents, strong

parental involvement in the child's treatment, and well-structured, individualized special education. (Morgan, 1986, p. 6) For teaching the autistic child speech, social, and self-help skills, application of behavior modification principles has been effective and appears to enhance adaptive functioning. Special education efforts should focus on the development of speech and cognitive skills, as well as social and adaptive skills. Special education efforts are most productive when integrated within broad community-based treatment programs. The TEACCH (Treatment and Education of Autistic and related Communications handicapped CHildren) programs in North Carolina represent a community approach that provides comprehensive educational and treatment services to autistic individuals and their parents. (Morgan, 1986). In writings by Cantwell and others, a discussion is found of what is "good" functioning in language. I feel this is important so that those who work with autistic individuals can set goals of what might be accomplished. Cantwell states that "good" language means using sentences with mainly correct grammar, being able to report happenings outside of immediate context, plus the absence of immediate or delayed echolalia or pronoun reversal. Good functioning in peer relations requires appropriate group participation, spontaneous group play, social approaches to other children, and having friends. Good public behavior was defined as socially acceptable in all locations. (Cantwell, et al., 1989)

9. There is a need for additional support for the autistic individual and his family as he enters adolescence and adulthood. I attended a workshop in the spring, 1990, focused on the need for support

of the family of autistic individuals, particularly, the need for support for siblings. Siblings may wonder why my brother has to be so different, or why does he get all the attention? Parents may have difficulty balancing the needs of a handicapped child with the needs of normal brothers and sisters. Also, siblings of autistic children are found to be autistic themselves approximately 50 times more often than the norm for the general population. (Simpson, et al., 1986). Professionals are now recognizing the special needs of the family, and are directing more effort toward research on family issues and development of appropriate services. Of special concern, as the individual enters adolescence and adulthood, is vocational training and placement as well as provision of adequate adult residences, such as community group homes, as alternatives to institutional placement. The general profile of an autistic adolescent is that of an individual who understands and obeys simple verbal commands when presented in a simple structured style, communicates simple verbal concepts, is able to control most disruptive behaviors, and is dependent on adults. Although some autistic individuals may exhibit what appears to be near normal intellectual abilities, they typically remain relatively limited intellectually. Often the information they do acquire is of questionable utility, such as memorized dates. Even the 10 to 20% who develop language and minimal social skills seem very eccentric and lack spontaneity. As higher functioning autistic adolescents realize their limitations, they may suffer anxiety, and occasional self-stimulatory behavior. While a small percentage of these individuals are able to function in competitive employment, the majority require sheltered

workshop training and services, when available.
(Simpson, et al., 1986). I am aware of one
residential home in the state of Iowa, a group
home for five individuals at Newton.

Summary

Autism is a pervasive developmental disorder whose core symptoms are social maladjustment, and delayed and impaired language and cognitive development. It is probably caused by a genetic defect or set of defects and affects the individual from birth. Autism is found in widely varying degrees of severity, but early intervention can ease the symptoms. It must be done in all areas of the child's life by teachers at school and parents. To achieve optimum results, parents should assume the role of primary therapists. The child will function best in a very structured environment under a behavior management program consistently used.

Lack of communication skill is central to autism, often involving both comprehension and expression. There are prelinguistic language skills parents can look for in young children to determine whether communication development is preceding at an adequate level. This is necessary so that therapy can begin at a very early age.

Cognitive development is another area affected by autism. Echolalia and self-stimulation frequently interfere with receptive language ability. False belief was one area of cognition studied which was a problem for autistics. Other areas of cognition also were difficult or impossible for autistic children. This is evidenced by the difficulty getting a believable IQ score from the usual individual standardized tests.

Social/play impairment is a third general area of difficulty. Autistics live in a lonely world. Lack of communication skill isolates them from others and may even cause behavior that seems strange. It is hard for parents and teachers to reach a child when they never know what he is

thinking, or indeed, if he is able to think in a logical sequence.

Communicative intervention should focus on being something the child is motivated to learn, being functional, and being something necessary to changing the immediate environment.

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